CLAIMS

The invention claimed is:

1. A method of encoding information, the method comprising:

identifying a length of information to be sent in a block code; and

encoding the information to be sent in the block code into one or more codewords in a manner to achieve a similar codeword error probability for each codeword considering available decoding time for decoding a last codeword will be less than available decoding time for decoding a first codeword.

2. The method of claim 1 wherein encoding includes setting code rates of the one or more codewords such that the last codeword has a lower code rate than the first codeword.

3. The method of claim 2 wherein encoding is performed by a low density parity check (LDPC) encoder.

4. The method of claim 2 wherein the code rates are set based on a forword error correction algorithm.

5. The method of claim 4 wherein the forward error correction algorithm determines:

(A) if the length is less than or equal to X bits (where X is a positive integer), then one codeword is used; else,

(B) if the length is greater than X bits and less than or equal to Y bits (where Y is a positive integer greater than X), then two codewords are used and wherein the information to be sent in the block code is divided substantially equally between the two codewords; else,

(C) if the length is greater than Y bits, then three or more codewords are used and wherein a code rate of the last codeword is set lower than a code rate of the first codeword.

6. The method of claim 5 wherein if an amount of information in the last codeword would be less than one half of an amount of information in the first codeword, (C) further comprises dividing a remainder of the information to be sent substantially equally between last two codewords.

7. The method of claim 1 wherein encoding includes setting code rates of two last codewords to be lower than a code rate of the first codeword.

8. The method of claim 1 further comprising modulating the block code into an orthogonal frequency division multiplexing (OFDM) multi-carrier signal.

9. The method of claim 1 further comprising broadcasting the encoded block code using one or more antennas.

10. A method of decoding information, the method comprising:

receiving a block code having one or more codewords containing information, and

decoding the one or more codewords by performing a number of decoding iterations on each codeword, wherein the number of decoding iterations performed on each codeword is proportional to an amount of information within the codeword.

11. The method of claim 10 wherein the amount of information within a last codeword is less than the amount of information within a first codeword and wherein the last codeword is decoded with fewer decoding iterations than the first codeword.

12. The method of claim 11 wherein the one or more codewords are LDPC encoded.

13. The method of claim 10 wherein the block code is received as a wireless transmission.

14. The method of claim 13 wherein the wireless transmission comprises an OFDM signal.

15. An apparatus having forward error correction (FEC), the apparatus comprising:

a memory portion to store information; and

a processing portion coupled to the memory portion and configured to:

identify a length of information to be sent in a message block; and

encode the information to be sent into one or more codewords in the message block based on the identified length to achieve a comparable probability of codeword error for all codewords in the message block given that at least one codeword in the message block will be decoded with fewer iterations than other codewords in the message block.

16. The apparatus of claim 15 wherein the apparatus comprises an LDPC encoder.

17. The apparatus of claim 15 wherein the length is identified from a physical layer control protocol (PLCP) header in a medium access control service data unit (MSDU).

18. The apparatus of claim 15 wherein the apparatus comprises an access point (AP).

19. The apparatus of claim 15 wherein the apparatus comprises a wireless communication device.

20. The apparatus of claim 15 wherein the apparatus comprises a network interface card (NIC).

21. The apparatus of claim 15 wherein the apparatus comprises a base station.

22. An apparatus utilizing forward error correction (FEC), the apparatus comprising:

a memory portion to store information; and

a processing portion coupled to the memory portion and configured to decode codewords in a received block code, wherein a number of decoding iterations used for decoding is substantially proportional to a code rate for each codeword.

23. The apparatus of claim 22 wherein a number of decoding iterations for decoding a last codeword in a multi-codeword block is less than for decoding a first codeword in the multi-codeword block and wherein a codeword error probability for the first codeword is similar to a codeword error probability for the last codeword.

23. The apparatus of claim 22 wherein the codewords in the received block code are low density parity check (LDPC) codewords.

24. The apparatus of claim 22 wherein the received block code is received in an OFDM signal.

25. A communication system comprising:

a transceiver operative to send and receive block encoded messages; and

a block encoder coupled to the transceiver and configured to encode information to be sent in a block code into one or more codewords having a code rate adjusted to achieve a comparable codeword error probability for each codeword in the block code considering available decoding time for decoding a last codeword is less than available decoding time for decoding a first codeword.

26. The system of claim 25 wherein the transceiver includes a modulator to modulate the block encoded messages into a multi-carrier signal.

27. The system of claim 26 wherein the multi-carrier signal is modulated using OFDM.

28. The system of claim 25 wherein the block encoder comprises an LDPC encoder.

29. The system of claim 25 wherein the overall length of the information to be sent is identified from a PLCP header in a MSDU.

30. The system of claim 25 further comprising a decoder coupled to the transceiver and configured to decode codewords in a received block code wherein a last codeword in the received block code is decoded with fewer iterations than a first codeword in the received block code.

31. The system of claim 25 further comprising an antenna coupled with the transceiver and operative to broadcast and receive wireless transmissions.

32. A wireless communication device comprising:

encoding means for encoding information to be sent into a block code into one or more codewords to achieve a similar codeword error probability for each codeword considering available decoding time for decoding a last codeword is less than available decoding time for decoding a first codeword; and

modulation means for modulating the block code into a multi-carrier signal.

33. The device of claim 32 wherein the overall length of the information to be sent is an amount of information contained in an MSDU.

34. The device of claim 32 wherein the multi-carrier signal is an OFDM signal.

35. The device of claim 32 wherein the device comprises an AP.

36. The device of claim 32 wherein the device comprises a mobile station.

37. The device of claim 32 wherein the device comprises a NIC.

38. A method of encoding comprising:

identifying a length of information to be sent in a block code; and

encoding the information into one or more codewords to be sent in the block code wherein at least a number of codewords or an amount of information encoded within a codeword is selected to achieve a minimum threshold code rate for each codeword.

39. The method of claim 38 wherein encoding is performed by a low density parity check (LDPC) encoder.

40. The method of claim 38 further comprising modulating the block code using an orthogonal frequency division multiplexing (OFDM) multi-carrier signal.

41. The method of claim 38 further comprising broadcasting the encoded block code using one or more antennas.